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The Product Potential For Atlantic Mackerel – An Industrial Survey

Wolfgang Uebel

Fisheries Development Division
Fisheries and Habitat Management
Newfoundland Region
P.O. Box 5667
St. John's, Newfoundland
A1C 5X1

August, 1988

Canadian Technical Report of Fisheries and Aquatic Sciences No. 1708

Fisheries and Oceans Pêches et Océans

Canada

Canadian Technical Report of Fisheries and Aquatic Sciences

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THE PRODUCT POTENTIAL FOR ATLANTIC MACKEREL

-AN INDUSTRIAL SURVEY

WOLFGANG UEBEL

FISHERIES DEVELOPMENT DIVISION
FISHERIES AND HABITAT MANAGEMENT
NEWFOUNDLAND REGION
P.O. BOX 5667
ST. JOHN'S NEWFOUNDLAND
A1C 5X1

AUGUST 1988

CANADIAN TECHNICAL REPORT OF
FISHERIES AND AQUATIC SCIENCES
No.1708

90-02241/

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By

Wolfgang Uebel[1]

For

Fisheries Development Division
Fisheries and Habitat Management
Newfoundland Region
P.O. Box 5667
St.John's, Newfoundland
A1C 5X1

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[1] Wolfgang Uebel and Associates, St.John's, Newfoundland

Minister of Supply and Services Canada 1988
Cat. No. Fs 97-6/1708E ISSN 0706-6457

Correct citation for this publication:

Wolfgang Uebel and Associates, 1988, The Product Potential For Atlantic Mackerel - An Industrial Survey - 1988. Can. Tech. Fish. Aquat. Sci.1708: vi + 38 p.

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ABSTRACT

A selected sample of the Eastern Canadian fish processing industry and its trade organizations was surveyed with the purpose of reviewing the 1974/75 Mackerel Development Program and to determine the current product potential for Atlantic mackerel. It is intended to provide an overview of the survey results in the following report. The report also includes abstracts of the opinions expressed and comments made by processors on issues which are not necessarily directly related to the study objectives, but which may have indirect bearing on the development of the mackerel resource.

RÉSUMÉ

Une enquête a été effectuée auprès d'un énchantillon représentatif d'usines de traitment de poisson et d'organisations syndicales concernées de l'est du Canada en vue de réviser le programme de mise en valeur du maquereau de 1974-1975 et de déterminer le potential actuel de cette ressource. Le présent rapport vise à fournir une vue d'ensemble des résultats de cete enquête. Il contient aussi le résumé d'opinions et de commentaires exprimés à cette occasion par les transformateurs sur diverses questions qui, sans être directement reliées aux objectifs de l'enquête peuvent avoir une incidence sur l'exploitation du maquereau bleu.

SUMMARY AND CONCLUSIONS

1. The 1974/75 Mackerel Development Program

Due to changes in management and company ownerships, little detailed information of the 1974/75 mackerel development program could be obtained from the participants. Of all the products developed in the pilot production stage of the program only smoked mackerel fillets in flat cans went into limited production. The major reasons for the failure to commercialize or for the low production levels are lack of raw material, lack of markets or marketing expertise, low priorities on mackerel products in the mid-1970's, and shortage of development funds.

Benefits derived from the project were the development of in-house expertise in product and market development by some companies.

2. Product Potential for Atlantic Mackerel

2.1 Mackerel is considered one of the last undeveloped fish resources in Canadian waters, and most processing facilities in Atlantic Canada are underutilized. Processors are consequently extremely interested in the development of this resource potential.

2.2 Processing facilities for primary and secondary mackerel products exist in Eastern Canada and are generally underutilized. Excess processing capacities for secondary products are often located in areas where current mackerel landings are small and/or prices too high to allow for economically viable processing.

2.3 Round, frozen mackerel for human consumption represents the largest and most immediate product potential for Atlantic mackerel. Estimated current demands of 50,000 MT can be produced with existing freezing capacities in Atlantic Canada with proper planning. Constraining factors are the current unavailability of raw material, high mackerel prices and insufficient lead time to prepare for production, due to delays in the allocation of quotas and/or experimental fishing licences.

2.4 Other potential for primary mackerel products exists in the expansion of bait and fillet production, and for salted and cured mackerel products.

2.5 The product potential for secondary products, namely canned products and smoked mackerel fillets, is high. Large investments in product and market

development are required in this sector and companies are generally prepared to make these investments if they can be reasonably assured that good quality mackerel will be available to them at competitive prices on a long term, or at least, mid-term basis.

2.6 Port prices for mackerel must be in the 5-9 ¢/lb range to ensure viable operations, both for primary and secondary products.

2.7 While the value-added component for primary products is relatively small, it can be substantial for secondary products, namely, canned and smoked products. If Canadian landings were to reach 100,000 MT annually, the additional revenue from the resource could be between 40 million and 130 million dollars at current price levels, depending on the degree of processing.

2.8 Quality standards for some secondary products specify sea-frozen mackerel as raw material. If this product is not available from Canadian vessels, it will likely be imported.

2.9 To be economically viable, most secondary processors require the less expensive fresh mackerel as a source of raw material, as opposed to frozen product. Thus, harvesting areas, times and methods should be co-ordinated in view of the plant locations and needs of the processor.

2.10 To protect the investment of processors in product and market development and plants, and to aid in the orderly development of the resource, enterprise allocations should be considered.

2.11 The realization of the potential of the mackerel resource depends ultimately on the opening of the fishery to the offshore fleet sector with a minimum of restrictions and limitations.

3. Marketing Aspects

3.1 Processors stress the point that markets for primary products are readily available if the industry can be competitive. Demand exceeds supply but high prices paid for inshore mackerel make it impossible to compete internationally.

3.2 The Free Trade Agreement with the United States can be an important factor in deciding where to locate a secondary processing facility.

3.3 The high fat content of mackerel and its relatively high Omega 3 levels could be used in the promotion of mackerel products.

3.4 Wide concern exists that Canada is losing markets to the United States and other producers because of the limited supply.

4. The Resource and Harvesting Sectors

4.1 The main issue for processors is the opening of the mackerel fishery to the offshore fleet, with no or minimal restrictions as to the areas fished and gear employed. This is considered the deciding criteria for the development of the mackerel resource.

4.2 Consideration should be given to enterprise allocation for large vessels to protect their investment in gear, RSW installations, etc., a combination of E.A. for large vessels and processing plants could be feasible.

4.3 Vessels with freezing capacities should be permitted to participate in the mackerel fishery to encourage development of land based secondary processing in Atlantic Canada.

4.4 Allocations to foreign fleets should only be made to the extent to which the resource is in excess of Canadian fishing and processing capacity. (Some processors and especially trade associations felt that foreign allocations are acceptable in exchange for scientific data and votes at NAFO).

4.5 A five-year mackerel management plan should be formulated in support of an orderly development of the fishery.

4.6 Research and experimental fishing efforts in the Scotian Shelf-Bay of Fundy area should continue and be increased with a view of providing access to this resource for secondary processors located in the region.

4.7 Generally, research on the mackerel resource should be expanded to establish migration patterns, spawning areas and times, habitat, and stock assessments, with the objective to determine the most effective fishing methods.

5. The Inshore-Offshore Conflict

5.1 Inshore mackerel prices are considered too high to compete in world markets. Price levels are acceptable for bait and, with some reservations, for

canned products for CIDA Food Aid programs. These markets (and the associated price levels for inshore mackerel) can be protected if the offshore sector enters the fishery.

5.2 Quality problems associated with inshore mackerel particularly in the Maritimes render them generally unsuitable for secondary processing and often also for primary production.

5.3 The inshore-offshore conflict is basically an internal Canadian social problem and has to be resolved through internal negotiations and political decisions. Hopes to resolve this problem through export sales of Canadian mackerel at higher than market prices in an international competitive market are unrealistic.

5.4 The potential impact of offshore sector participation in the mackerel fishery on the inshore sector, in general, and the individual fisherman, in particular, should be assessed.

INTRODUCTION

In 1974/75 the Department of Fisheries and Oceans undertook an Atlantic Mackerel Development Program in conjunction with the five eastern provinces and eight fish processors in the region. In the first stage of the development program, the eight participating processors pilot produced twelve varieties of products from Atlantic Mackerel in semi-commercial conditions and quantities. The intent was to test-market these products in a joint venture between the Department and the participating companies with the purpose of obtaining an initial indication from the market place as to the market potential for the respective product groups.

Upon completion of the pilot production, mid and long term development proposals were formulated with the objective to initiate the establishment of a viable mackerel industry in Atlantic Canada. The proposals included various projects in the harvesting, processing and marketing sectors but were not approved for implementation as a result of the participating government departments decision not to finance these types of initiatives.

In view of the renewed interest in the mackerel resource and the resulting initiatives to formulate an Atlantic Mackerel Development Plan, the Department of Fisheries and Oceans felt that a survey of the processing industry should be conducted to re-evaluate the 1974/75 product development project and to assess the potential of the products produced in the pilot project in light of today's circumstances. Accordingly, Wolfgang Uebel and Associates were engaged by the Department to conduct this survey.

TERMS OF REFERENCE

In accordance with the survey objective, the terms of reference require the consultant:

1. to review the 1974/75 Atlantic Mackerel Development Program, specifically the successes and failures of the product lines developed under the pilot projects, to identify the contributing factors for the success/failure and to assess the results in view of today's circumstances;

2. to assess development initiatives unrelated to the 1974/75 Development Program, if any, and the current degree to which mackerel are processed; and,

3. to prepare a cursory assessment of the actual plans or potential to expand existing product lines, or to introduce new products in relation to current and projected quotas.

To achieve this, the consultant was required to interview:

1. The participants in the 1974/75 pilot project, including the five provincial governments and those industry participants who are still in business.

2. A representative sample of existing mackerel producers (canned or otherwise) in each of the five provinces, whether they are involved in the 1974/75 program or not; and

3. One or two of the large fish processing companies to obtain their views as to the potential for producing mackerel products.

As the survey proceeded, it became apparent that the interviews could not satisfactorily address products and product potential without also discussing markets and the respective company's access to the resource. In consultation with the Department, it was therefore decided that these issues should be included in the consultants report, to the extent to which they were relayed to the consultant during the survey.

WORK ORGANIZATION AND CONSTRAINTS

In all, 34 companies or agencies were interviewed during the survey. A list of participants is included in Appendix "A" which also contains summaries of the individual interviews. With the exception of provincial government departments, all interviews were conducted with fish processing companies or their Associations. The contents of this report therefore reflect the statements and opinions of the persons or companies interviewed during the survey which, we believe, represent a reasonably representative sample of the mackerel processing sector in Atlantic Canada.

The consultant held informal discussions with fishermen and their organizations during the course of the survey to enhance and deepen their understanding of the issues pertaining to harvesting of the resource. These issues, specifically the inshore-offshore conflict in the mackerel industry, are outside the terms of reference of this report. They are therefore covered in the following only to the extent to which processors expressed opinions pertaining to the harvesting sector.

Many processors expressed deep concern that their development proposals are being discussed openly and in detail by the working group and thus in front of their competitors. As a result, they were often reluctant to discuss specific product development initiatives with the consultant. To alleviate this problem, the Department agreed to protect the confidentiality of specific information and not to publish the individual survey reports or visiting notes.

We mentioned above that statements made in this report pertaining to marketing and markets are those made by the processors who participated in the survey. They are included in this report because of the emphasis placed on them by the processors and because it is felt that this information may assist in the direction of a marketing study for mackerel and mackerel products. It is not the intent of the consultant to provide a marketing study with this report and it should not be construed as such.

GENERAL BACKGROUND

Atlantic mackerel (scomber scombrus) is being extensively fished in the Northeast Atlantic and, to a lesser degree, in the Northwest Atlantic and the Mediterranean, while other mackerel species are harvested world wide from the South Atlantic to the Indian Ocean. Landings in recent years have been around the 1,000,000 tonne mark of which about 60 percent is comprised of Atlantic Mackerel (Table I).

Table I
Mackerel Landings 1982-1987 (in 1000 MT)

	1982	1983	1984	1985	1986	1987
Atlantic Mackerel						
Northwest Atlantic						
Total	30	29	33	55	61	n/a
Canada	16	20	17	30	28	27[1]
Northeast Atlantic						
Total	578	537	616	540	543	n/a
Mediterranean						
Total	18	10	11	13	16	n/a
Atlantic Mackerel						
Total	626	576	660	608	620	n/a
Other Mackerel						
Total	395	476	527	573	531	n/a
All Species						
Total	1,021	1,052	1,187	1,181	1,151	-

[1]Preliminary
Sources: FAO, DFO

Although detailed statistics are not available at the time of writing, it is understood from industry reports that mackerel landings in Europe are on the decrease since 1985, a trend expected to continue in the foreseeable future according to industry sources. In the wake of this development, European and Eastern Block countries have increased their efforts to find new sources of supply. The mackerel stock in the Northwest Atlantic is one such potential source. This stock, with an estimated biomass of in excess of 1,000,000 tonnes, is transboundary and shared between the United States and Canada, neither of which fished it aggressively until 1985. During that year, the U.S. started to increase its landings from its domestic fleet and, in particular, through allocation to foreign fleets from a level of about 10,000 MT annually in the early 1980's to about 60,000 MT during the last three years.

Canadian landings since the mid 70's have averaged about 23,000 MT annually, ranging from 16,000 MT to 30,000 MT. During that time the relative importance of mackerel landings from the Scotian Shelf decreased rapidly from about 50 percent of total landings in the mid 70's to about 15-25 percent in recent years. At the same time, landings on the East Coast of Newfoundland increased from about 30 percent to 40-50 percent of total landings while Gulf landings increased from approximately 10-20 percent to 35-40 percent of total landings (Table II).

While prices received by mackerel fishermen in the Maritimes and Quebec have been at roughly comparable levels during the past six years, Newfoundland prices were substantially below those paid in the rest of Atlantic Canada. One reason for this may be that the mackerel inshore season overlaps with the lobster and crab fishing seasons in the Maritimes and a large percentage of mackerel landings are sold fresh for bait (up to 47 percent in 1984). Savings on packaging, processing, freezing and freight would allow the processor in the Maritimes to return higher prices to the fishermen than the Newfoundland processor, who must process almost the entire landings.

By far the largest proportion of Canadian mackerel landings are sold round, fresh or frozen for food, feed and bait. These products account for 70 percent or more of annual landings, while approximately 15-20 percent of the landed weight are processed into salted or otherwise cured products, and an estimated 10 percent of the landed weight is being canned or otherwise preserved, predominantly for the CIDA food aid programs.

Table II
Canadian Mackerel Landings
Quantity and Value by Province
1983 - 1987

Landings		1983	1984	1985	1986	1987[1]
Newfoundland	MT	8,308	5,867	15,749	12,437	13,094
Nova Scotia		5,514	6,400	6,176	4,350	5,243
New Brunswick		1,734	1,085	3,269	3,723	2,806
Prince Edward Island		2,071	1,748	2,489	4,943	3,566
Quebec		2,164	2,231	2,178	3,004	2,753
Total Canada		19,791	17,331	29,861	28,457	27,467
Value						
Newfoundland	000$	1,827	846	1,884	1,573	2,266
Nova Scotia		1,624	1,652	1,717	1,357	1,821
New Brunswick		561	285	736	187	918
Prince Edward Island		600	469	621	1,200	1,131
Quebec		580	682	643	840	733
Total Canada		5,192	3,934	5,601	5,757	6,869
Value						
Newfoundland	¢/kg	21.9	14.4	11.9	12.7	17.3
Nova Scotia		29.5	25.8	27.8	31.2	34.7
New Brunswick		32.3	26.2	22.5	21.1	32.7
Prince Edward Island		28.9	26.8	24.9	24.3	31.7
Quebec		26.8	30.5	29.5	28.0	26.6
Total Canada		26.2	22.7	18.7	20.2	25.0

[1]Preliminary
Source: DFO

The method by which mackerel is fished may influence the suitability of the raw material for a specific product. It was therefore attempted to secure data as to the relative importance of various fishing methods in different regions of Atlantic Canada. While data from the Gulf region is not available at this time, Tables III and IV provide this information, for Newfoundland and the Scotia-Fundy Regions.

Table III

Mackerel Landings by Gear Type, Scotia-Fundy Region (in % of total landings)

	1985	1986	1987
Traps (all types)	45.8	41.2	51.5
Gill Nets (set)	25.4	23.2	20.2
Handlines	19.5	12.8	19.4
Weirs	7.0	19.7	7.4
Others	2.3	3.1	1.5
	100	100	100

Source: DFO

Table IV

Mackerel Landings by Gear Type, Newfoundland Region (in % of total landings)

	1985	1986	1987
Purse seine	82.5	79.1	73.1
B & B seine	11.3	12.1	14.7
Gill net (set)	4.7	5.8	6.7
Trap	1.5	3.3	5.4
Other	-	.3	0.1
	100	100	100

Source: DFO

REVIEW OF THE 1974/75 PILOT PROJECT

Of the eight processing companies that participated in the 1974/75 pilot project, five have gone out of business or changed ownership and management and three remained in business with the previous management. Although the companies with changed management were surveyed, no information was available as to the specifics of the project. The products which were pilot produced are briefly discussed in the following:

Smoked Mackerel Fillet in Flat Cans

These were pilot produced at the IMO Foods plant at Yarmouth under the "Kersen" brand. The sample production was sold and production continued at a moderate level. The company now produces about one truckload of product per year and plans to continue at this level. The company says that they are losing money on this production but continue to pack to "keep the foot in the door" of this market and to satisfy customer demand at the lowest possible level, e.g. supply as little as they can get away with, while filling mackerel orders of customers who buy their main product, canned herring. Last year's canned mackerel production was produced from frozen imported mackerel fillets because local mackerel was too expensive and/or not available.,

The company is confident that it could triple or quadruple sales if raw material, e.g. fresh or frozen, round mackerel or fillets were available at consistent quantities and at competitive prices. Price level for round mackerel would have to be 5-6 ¢/lb. with comparable level for fillets.

Another factor limiting economical production is the shortness of the fishing season, which forces the company to work with high proportions of more expensive frozen raw material.

Generally, the pilot project was viewed as a good start but the results fell short of expectations because of lack of supply at competitive prices.

Fillets in Various Sauces in Flat Cans

The products were pilot produced by UMF which has gone out of business and could not be interviewed. The products could be produced by other processors (IMO, Connors, Janes) and will be discussed later in the report. Generally, the same issues as for the canned, smoked product apply.

"Salmon" Pack Canned Mackerel

These were pilot produced at Gully Fish and Food Co. Ltd.. The management has no recollection of the product and could not comment on the development program. The product did not go into commercial production and is felt to have little or no market potential today. (It will be addressed in the following under the general heading of "Canning Products"). The lack of raw material was also cited as a reason for the failure to commercialize the product.

Sandwich Spreads, Canned

The company which pilot produced this product has changed ownership, the canning facility in which the spreads were prepared was lost by fire shortly after completion of the project and never rebuilt. This is believed to be the major cause for discontinuation of production

The current product potential will be discussed under "Specialty Products" later in this report.

Smoked, Frozen Fillets

Quebec United Fishermen produced these products under the development program. The company has since been taken over by Purdel and no information could be obtained regarding the 1974/75 development project. Smoked mackerel will be addressed further in the chapter "Specialty Products" of this report.

Minced, Breaded Frozen Portions

Again, the company which produced this product went out of business and no information could be obtained from the successor company.

Breaded Sticks, Fillets and Cakes

P. Janes and Sons pilot produced and marketed these products under the 1974/75 project but did not commence commercial production. The reasons stated for the failure were lack of marketing expertise as it related to the retail market sector, the cutting of government funds from the project before commencement of test marketing and generally a low priority on the side of the company for this type of product at the time. The management feels that their involvement in the project and others like it, helped in developing the in-house product development and marketing expertise which they now have. They are now interested in reviving the product but feel market research is necessary before product development work and commercial production can proceed.

Frozen and Salted Roe

The proposed production of roe did not materialize during the pilot project. The potential for roe production will be addressed later in the report under "Specialty Products".

SUMMARY OF 1974/75 PILOT PROJECT

Due to changes in management and company ownerships, little detailed information on the 1974/75 mackerel development program could be obtained from the participants. Of all the products developed in the pilot production stage of the program only smoked mackerel fillets in flat cans went into limited commercial production. The major reasons for the failures to commercialize or for the limitation of productions are lack of raw material, lack of markets or marketing expertise, low priorities on mackerel products in the mid-1970s, and shortage of development funds.

Today, mackerel is considered one of the last undeveloped fishery resources potentially available to Canadian processors. Excess processing capacities exist in most areas of Atlantic Canada and the majority of processors are keenly interested in the development of the resource potential.

THE PRODUCT POTENTIAL FOR ATLANTIC MACKEREL

Potential mackerel products have been divided into three loosely defined product groups for the purpose of this report.

Primary Products: Primary products are defined as those product forms for which the mackerel has undergone little or no processing. The product is traded in a state that closely resembles the natural attributes of the mackerel and generally can easily be identified as mackerel. Products included in this group are round, dressed, split and filleted mackerel which are either fresh, frozen, salted or pickled. Most primary products are destined for industrial use or institutional markets and are often reprocessed or repacked.

Canned Products: This group includes the various types of cans and products which appear to have potential, either because of the facilities for their production exist in Atlantic Canada, or because of their market potential, or both. Canned products are usually sold to institutional or retail markets often through brokers, wholesalers or distributors.

Specialty Products: This is a group of secondary products in which the mackerel has usually undergone substantial processing which results in changes to its natural shape and physical or chemical properties, and is normally not readily identifiable as mackerel. Products

of this group include spreads, marinated products, smoked, breaded, and roe. The majority of these products are sold through the retail trade or into institutional markets.

Primary Products

More than 90 percent of current Canadian mackerel landings are traded as primary products. About 50 percent of all landings are processed into round, frozen mackerel, while approximately 20 percent each are sold fresh and processed into salted or otherwise cured products. The remaining 10 percent of total landed weight are being processed into canned or preserved products.

A very cursory review of European trading statistics up to 1985 reveals that about 90 percent of all trading in Atlantic mackerel is in the primary product form with the remaining 10 percent of the landed weight being traded in secondary products. While these figures seem to correspond with Canadian data, they do not, of course, take into account domestic production and consumption in those countries which are both major producers and consumers of mackerel product. The numbers may, however, provide an indication of the order of magnitude and of processing activities in other countries.

Round Fresh Mackerel

The market for this product is dominated by the demand for bait, with small amounts finding their way into local retail markets. The product and market are typical for the Maritimes where demand and supply coincide in various areas and at various times of the year. The potential for expansion is limited for this product, both by the demand and the erratic supply of mackerel in localized areas, and by the very limited storage life of mackerel in its fresh form.

Processors generally sell fresh mackerel for bait at cost, or with very little mark-up to their fishermen in order to obtain the resulting landings. Within these limitations

the product tends to provide a ready market and good returns for local mackerel fishermen and, at the same time, a reasonably priced source of bait for other fishermen. The value added component of this product is virtually nil.

Round Frozen Mackerel

As mentioned before, over 50 percent of current Atlantic mackerel landings are processed to round, frozen product. This product is sold domestically for bait or food or exported to the United States for bait, food or feed, while smaller quantities are exported to Japan, Europe and West Africa.

Prices for this product can, and do, react strongly to changes in supply and demand. The bait market often pays prices well above the levels acceptable in the food and feed markets and can therefore be considered the dominating market force for much of the year.

Bait

Mackerel is the preferred bait of many lobster and crab fishermen and longliners in Atlantic Canada. When supply is short, fishermen are prepared to pay almost any price for their bait, and consequently, prices can fluctuate strongly throughout the year from a low in the high teens to a high in the mid or high 40's (c/lb).

It is generally felt that the Canadian inshore fleet can supply the demand of bait from June through October, although regional shortages may occur at certain times. Considerable quantities of mackerel are imported for bait during the winter and early spring. It is believed that at least some of the bait imported during that time is actually Canadian mackerel that had previously been exported to the United States. Some processors feel that Canada sells round, frozen mackerel to the United States during the summer and fall for "25 ¢/lb or so" only to re-import them five months later for 45 ¢/lb.

The major reasons preventing Canadian companies from maintaining bait inventories for winter and spring deliveries are lack of cold storage capacity and cash flow problems. One

interesting comment was that fishermen will accept a 50 ¢/lb price for imported mackerel but "never" for mackerel processed and inventoried by the local plant.

A major concern during the spring and early summer mackerel season in the Gulf of St. Lawrence is the quality of the mackerel, especially with respect to red feed which severely restricts, if not excludes, the product from use as bait.

Summary

Production of round, frozen bait mackerel could be increased to the extent of replacing bait imports for the winter and spring fishery. Higher prices during winter and spring can absorb inventory cost and could actually increase average returns from bait. This in turn would contribute to a stabilization of mackerel prices in the port market. Lack of cold storage capacities in certain areas, specifically in Prince Edward Island, and cash flow restrictions, constitute major constraints. The provinces involved could investigate the possibility of introducing bait services, probably in conjunction with industry, to overcome these constraints.

Feed

Low fat and preferably small size mackerel can be round frozen for aquarium or zoo feed. Potential for this product appears to exist particularly in Southern New Brunswick where mackerel caught in weirs are often too small to be suitable for other product forms and are consequently not harvested.

Price levels for this product are low, in the low 20's ¢/lb, and often below 20 ¢/lb, and it must compete, beside others, with herring and male capelin. While the proximity of Southern New Brunswick to the United States markets is advantageous in terms of relatively low freight cost, the prices paid to fishermen for their mackerel could probably not exceed 5-6 ¢.lb.

It can be assumed that this price level will exclude the use of mackerel for feed in most areas of Atlantic Canada at

this point in time. This product has very little potential in the opinion of the majority of processors surveyed.

Food

Round frozen mackerel for human consumption represents the largest and most immediate potential for Atlantic mackerel. The majority of Atlantic mackerel landed in Canada and, in fact, world wide, is traded in the round frozen state, with the possible exception of fresh, whole mackerel which is extensively traded within Europe. International trading patterns are considered important indicators for the potential of product and market development in Canada, because the domestic market is limited by the country's relatively small population base and could not absorb the volumes of mackerel that are potentially available.

Round frozen food mackerel is generally viewed as a low cost food item and is being traded as such. Most surveyed companies have produced this product at various times in the past, and existing plant facilities are, in general, able to handle this product.

The most important volume markets for frozen whole mackerel are Africa, specifically Nigeria, the Ivory Coast and Egypt, and the Eastern Block countries. Europe and Japan are interested in large size mackerel, usually 600 grams and higher and the United States is buying limited quantities of ocean run mackerel for human consumption. China, including Hong Kong, has recently shown interest in the product, but little detailed information was available from the companies interviewed.

Round, frozen mackerel are usually packed in corrugated cardboard cartons containing between 10 and 20 kilos each. Depending on customer specification and price level, they are either jumble packed, hand layed with interleafing plastic sheets or I.Q.F. Both blast and plate frozen product is acceptable in most markets.

Landings in Europe have declined in recent years, and it is felt that Canada (and the United States) can fill the

shortfall in the high volume markets of Africa and Eastern Europe, if the Atlantic industry can produce the product at competitive prices. Current price levels range from the low to mid 20's ¢/lb F.O.B. (stowed) Canadian port, for ocean run, jumble pack mackerel for African and Eastern Block markets, through the mid to high 30's ¢/lb F.O.B. Canadian port for large falling mackerel for Japan and Europe, with up to 45 ¢/lb and more for specialty items like I.Q.F. mackerel for the United States market.

The majority of surveyed companies have had volume contracts for this product in recent years or could have obtained contracts. In most instances companies could not fulfill their contractual obligations, or refrained from entering into contracts because the inshore fleet was not able to land the necessary quantities of mackerel. Many volume contracts contain penalty clauses for non-delivery or short delivery, and, generally, customer relations, and thus overall, business can suffer if contracts are repeatedly not honoured. For these reasons many processors have made no attempts to secure contracts for 1988 and beyond, while only a few companies have secured contracts for substantial volumes of mackerel to be delivered during 1988, or reached tentative agreements for the supply of unspecified, but large quantities of mackerel in 1988 and beyond. These products are to originate almost exclusively from Newfoundland.

Volumes quoted by the surveyed industry indicate an immediate market potential for 45,000 to 50,000 MT of round frozen, mackerel and annual growth rates of between 10,000 and 20,000 MT. These figures represent the total current contract potential as quoted by individual companies in the survey and as some of these quotes may refer to the same contract or customer, the actual market potential is likely somewhat lower. It is also highly unlikely that landing levels during 1988 will be anywhere near these volumes and that, even if the quantities could be caught, the industry would be able to handle the processing of these volumes at its present level of preparedness.

Freezing and cold storage capacities are generally well distributed throughout Atlantic Canada to handle the produc-

tion of this product, although additional facilities, especially cold storage capacity may be needed in some locations. Processing equipment, namely grading machines, unloading and other handling equipment need to be installed or upgraded to enable the industry to handle increased amounts of mackerel economically. Processors indicated willingness to invest in the necessary facilities if a consistent supply of mackerel were to be made available to them for the long or, at least, mid-term.

The vast majority of the surveyed processors feel strongly that the potential of this product can only be realized if large volumes of mackerel can be landed at price levels of 5-8 ¢/lb. To achieve this, the most efficient fishing methods must be employed to harvest the resource, and the fishery must be opened to large seiners and probably mid-water trawlers, with minimal or no restrictions other than the TAC and, possibly, enterprise allocations. Only the involvement of the offshore fleet in the fishery can ensure the volumes, prices and extension of the fishing and processing seasons necessary for a viable mackerel industry. It should be noted, however, that most of the surveyed companies on Prince Edward Island oppose the participation of large seiners or mid-water trawlers in the mackerel fishery.

The major arguments provided by the industry for an opening of the fishery to the offshore sector of our fleet are quality related or of an economical nature, including:

- offshore mackerel can be landed at the necessary price range of 5-8 ¢/lb while inshore prices of 14 ¢/lb and more, effectively excludes inshore mackerel from use in this product;
- offshore mackerel can be fished for extended periods of time, thus increasing the length of the processing season and plant utilization;
- the quality of offshore mackerel is considered superior to that of inshore mackerel, especially if transported in RSW. Major quality problems associated with inshore mackerel are soft texture, as a result of generally poor handling practices (no slushing), red feed, and net marks which make the fish unsuitable for the more lucrative Japanese markets;

- offshore mackerel enjoy a stable price structure, usually at least for the duration of the fishing season, and are not subject to price fluctuations caused by the domestic bait market;

- only offshore vessels can land the quantities necessary to market this product competitively, specifically to ensure acceptable freight rates through bulk transportation.

Mackerel generally is a marginal species, both for fishermen and processors, and round frozen mackerel in particular provide only marginal returns to the processor and have a low value-added content. At an assumed port price of 7 ¢/lb or $154/MT and a yield of 90 percent for round frozen mackerel, average production cost per MT can be estimated as follows:

$171	Raw materials
135	Labour
80	Packaging
54	Freight out and stowage

Total direct costs are then $440/MT. If the mackerel has to be collected from various areas and trucked into the plant for processing, or if the frozen product has to be stored in public warehouses before shipment, the cost could increase by as much as $75/MT. Costs will, of course, vary from plant to plant, but these figures may provide an indication of the narrow margins associated with this product if compared with sales prices of around $530/MT.

Despite the marginal nature of round frozen mackerel, most processors, including those contemplating secondary processing, feel that this product constitutes the "seed product" for future development of the resource or a stepping stone without which there will be little development. The reason for this is that this product can be produced in existing facilities without, or with very little, additional capital investment and can be sold to a readily available market.

The successful participation in this product and market can, and is, being viewed by many as a test case which will

prove or disprove that large quantities of mackerel can indeed be consistently harvested on the East Coast of Canada. Only if this consistent supply of good quality mackerel at competitive prices is assured will processors feel justified in making the necessary investments in product and market development and capital projects that will allow them to enter the secondary product markets.

Summary

A major product potential exists for round frozen mackerel for human consumption. Facilities for the production of this product exist in Atlantic Canada and markets appear to be readily available. Returns from the product are marginal, both for fishermen and processors, and current price structures limit the port price to 5-8 ¢/lb mackerel. Sufficient supply to meet demand at current price levels can only be achieved through the implementation of efficient harvesting methods by the Canadian offshore fleet. The majority of processors surveyed favour the opening of the mackerel fishery to large seiners and other segments of the offshore fleet. Prince Edward Island generally opposes such a move. To facilitate the production of round frozen mackerel as well as the development of other products, including secondary products, a resource development policy should be formulated and a 5 to 6 year management plan for mackerel enacted, affording processors the framework in which to formulate their individual development plans. The ability of the Atlantic fishing industry to competitively produce round frozen mackerel for world markets is being perceived by many processors as the deciding criteria for the development of other products and the resource in general.

Mackerel Fillets, Fresh and Frozen

Although many processing companies have facilities for the production of mackerel fillets, either manually or mechanically, the amount of mackerel fillets produced in Atlantic Canada is negligible. Fillets are predominantly sold to canning plants, smokers and, to a lesser extent, retail markets.

There appears little, if any, interest in the surveyed industry in this product because of lack of markets. One canning company stated that they are importing mackerel fillets from Europe because local product is not available consistently, and if available, it is too expensive and the quality is generally below European standards.

Domestic demand for fillets is limited, which may contribute to the low interest level for this product in the industry. Because of the high freight rates and generally higher prices paid for mackerel in many parts of Canada, export opportunities into Europe, the prime users of fillets, are considered basically nil.

Although it could not be ascertained, it is suspected that the limited domestic demand is a function of high prices and unavailability of product, and that consistent supply of low prices from domestic sources would generate additional domestic demand (see also under "Canned Products").

Mackerel fillets are generally the raw material for secondary processors and the potential for increased production depends ultimately on the effort and success of the secondary sector to develop new products and markets.

Salted Mackerel

Salted or pickled products are currently produced from split mackerel, mainly for markets in the West Indies and from mackerel fillets, predominantly for the United States. About 40 percent of the total Canadian production originates from Quebec and Newfoundland respectively and about 20 percent from Nova Scotia. Estimates of the market potential range from 3,000 to 7,000 MT annually.

Surveyed processors in New Brunswick appear to feel that there is little potential for this product because of the lack of supply, while Prince Edward Island processors stated that no markets exist for this product, possibly because of high raw material cost and subsequent high production cost.

It appears that a moderate to good potential exists to increase production of salted or pickled mackerel products with existing processing facilities. Market research is needed to identify additional markets, determine price levels and quality standards, and to assess the feasibility of these markets for Canadian producers.

Canned Products

About 10 percent or 2,000 tonnes of the annual mackerel landings in Canada are canned or otherwise preserved. By far the largest portion of this is canned for the CIDA Food Aid Program, while smaller amounts are processed into various flat canned products mainly for the domestic market. There is considerable interest in the industry to develop and produce canned mackerel in its various forms. Canning facilities, which exist in all Atlantic provinces, are currently under-utilized.

The reasons given for the low level of canned mackerel production are, in this order:

- raw material is not available or not available for long enough periods to support a viable operation;
- when raw material is available it is too expensive (with the exception of Newfoundland); canners in the Maritimes cannot compete with the bait market;
- graded, small sized mackerel or mackerel fillets are not available at competitive prices, since most mackerel is packed and frozen ungraded, and grading equipment is lacking;
- the quality of available mackerel is often sub-standard, namely soft, leading to ragged fillets, higher labour cost and lower yields; and
- markets or consumers do not accept certain traditional products; e.g., centre cut or 'salmon pack' type mackerel.

CIDA Food Aid Program

Centre cut, canned mackerel for the CIDA Food Aid Program are mainly produced by canners in the Maritimes with smaller

quantities originating from Newfoundland. Most companies in the survey which are packing or have packed this product do so for other than economic reasons. The reasons for which they do participate in the program are primarily social in nature, e.g., to provide employment and generate "insurable weeks" for their workers, to provide a port market for mackerel which would be difficult to sell otherwise, e.g., mackerel with red feed and, in some instances, simply to maintain good business relationships with CIDA because of other, mackerel unrelated, dealings.

Most companies state that the existing price structures in both the port market and sales prices to CIDA allow them to recover some or all of their overhead while some say that they are losing money on this operation. Reasons cited are high prices for mackerel (maximum price levels for viable production should be 6-9 ¢/lb), and short harvesting and processing seasons in localized areas. Many companies would like to increase their output for the Food Aid Program, but feel that they cannot do so within the present price structures. A recurring comment is the desirability of freezing mackerel during glut periods for canning at a later date. This would ensure a continuous product flow for the canning operation, provide workers with additional work and, more importantly, uninterrupted work to obtain full insurable weeks, and lead to better utilization of plant equipment and better productivity in general. On the other hand, the additional cost incurred in freezing and storage of the mackerel cannot be recovered under current price structures. A further problem is that the mackerel is often very soft after freezing and thawing and the canned product is ultimately rejected for the Food Aid Program.

Red feed in the round frozen mackerel could be a major contributing factor to the soft texture of the fish after thawing, and one potential remedy could be to head and gut the mackerel before freezing, which would also reduce the storage volume of the product.

It has been suggested that CIDA consider introducing a two tier price system, one price for fresh processed mackerel and another, higher price, for previously frozen mackerel, or,

alternatively, to increase the across-the-board price, to compensate for the use of frozen mackerel for their food aid product. Such a price structure could probably be on the condition that all raw material for this product be landed by inshore vessels and thus contribute to a stabilization of inshore mackerel prices.

Summary

Output of canned mackerel for food aid programs could be largely increased in existing facilities and industry has a strong interest to improve on current production levels. Prerequisites for such increases are either lower raw material cost or higher prices received by the processor for the product to allow for production from previously frozen mackerel in order to extend the processing season. Higher prices paid by CIDA could be one method to stabilize inshore mackerel prices.

Mackerel Products in Flat Cans

Mackerel is sold in flat cans of various shapes and sizes and numerous preparations such as smoked, naturelle or in various sauces. This product competes in the market place directly with herring, and, to a lesser degree, with other species such as pilchards, sardines and anchovies. Although current production levels are low, when compared to herring, substantial quantities of this product are being produced in Europe, namely Scandinavia and France. Processing facilities for flat cans in Atlantic Canada are predominantly employed in the production of herring products while use in mackerel production is very limited. All processors state that their facilities are underutilized and feel that increased mackerel production would not only provide for better utilization of existing capacities, but also fill existing demands in various markets. One company is contemplating the inclusion of canned mackerel in sauces in its product line, to be produced either in a plant to be built in Canada or abroad by a foreign producer under a joint venture agreement.

Flat canned mackerel can provide one of the highest value added components of all potential mackerel products. Rough

estimates indicate a labour content of up to $500 per tonne of landed weight processed into this product, and packaging cost of $500-800 per tonne of landed weight, depending on can size and material. The market, however, is extremely competitive and the product must not only compete with other species, but also with European production and/or exports of canned mackerel. The most common reasons for current low production levels in Canada are:

- prices for inshore mackerel are too high to competitively produce and market this product;
- canners often have to compete directly with the bait market for the mackerel;
- supply of inshore mackerel is subject to large fluctuations and uncertainties from year to year, and erratic during the local harvesting seasons of any given year; most of the time they are just not available;
- the quality of mackerel landed is inconsistent and size graded mackerel are normally not available.

Processors feel that a consistent supply of large volumes of mackerel at prices of 5-7 ¢/lb would result in substantial canning activities in the Maritimes, and although no volume estimates could be established, it is believed that several thousand tonnes of mackerel could be utilized for this product group within three or four years and enjoy high growth rates thereafter, as the products gain consumer acceptance.

The flat canning industry, like most other secondary processors, must depend on round frozen mackerel or frozen mackerel fillets for some of their annual production, which tends to increase the average price paid for raw materials in a given year. To maintain competitiveness it is essential to keep this calculatory price as low as possible by reducing the proportion of frozen mackerel used in the production to an absolute minimum. This means that the canners need access to landings of fresh mackerel at their wharves or within trucking distance of their plants for as long a period as possible.

In view of the poor results of recent experimental fishing ventures on the Scotia Shelf and in the Bay of Fundy, these requirements could be difficult to satisfy and possibly

restrict the development of this product in Southern Nova Scotia and New Brunswick. Continued research of the mackerel resource, their migration patterns and feeding habits, and the development of efficient harvesting techniques in this area are therefore considered prerequisites for the realization of this product potential in those areas.

Summary

The potential for increased production of mackerel products in flat cans is very good. Existing processing facilities are currently underutilized and there is an immediate, if modest, market demand for this product in North America, with potentially high growth rates. This product group has a high value-added content. Constraints in the development of this potential are current high prices for inshore mackerel and/or their unavailability. The majority of existing processing facilities and marketing expertise are located in the Scotia-Bay of Fundy region, and the ability or inability of the fishing fleet in that area to supply the processors with volume landings of fresh mackerel at competitive prices is the most important criteria in the development of this product.

Tuna Type Canned Mackerel Products

A number of companies have shown interest in the production of a tuna type mackerel pack. This is a boneless, skinless product of flaked or chunked, white or dark mackerel meat from which most of the fat has been removed. The product would probably be marketed in 200 gram cans and could appeal to consumers as a substitute for tuna at the low end of that market. Similar packs are presently produced in South America from pilchard and anchovies.

Some development work has gone into this product in recent years, but much more is needed to develop low-cost methods to process the mackerel mechanically and separate light and dark meat efficiently. A Danish method involving a skinning and fat removal process with caustic soda appears to hold some promise but has not been proven in commercial production. Product and process development cost for this

product, and capital investment in new processing lines to launch the product are believed to be substantial. Existing canning companies located on the Bay of Fundy could probably incorporate the necessary processing equipment into their existing infrastructures and, possibly for this reason, have indicated cautious interest in this product.

Although feasibility studies for this product are not available, it is stressed that on the basis of laboratory tests and general knowledge of the potential markets, the critical factor for a successful commercialization of this product is a consistent supply of fresh mackerel at price levels of 6-8 ¢/lb. Thus, the same requirements and constraints as discussed in the previous chapter on flat canning apply.

Pet Food

One processor expressed strong interest in mackerel as the base ingredient for pet food, specifically cat food. The company is presently producing cat food from mackerel in the United States and from other raw materials in Canada.

Test productions with Canadian mackerel in the past proved technically feasible but were discontinued because of the high prices for frozen mackerel. It is felt that very substantial amounts of mackerel can be utilized for pet food production if available at prices of 6-8 ¢/lb.

Other Canned Products

Some of the smaller canning companies feel that the domestic market for the traditional center cut, canned mackerel, is drying up because of consumer resistance to the skin and bone component in this product. It was suggested to replace this product with skin-on or skin-off mackerel fillets in one pound can. While the potential production volume of this product is relatively small, its successful introduction into the market place by small processors can contribute substantially towards a price stabilization for inshore mackerel in some areas of Atlantic Canada.

Specialty Mackerel Products

As defined for the purpose of this report this group includes all secondary mackerel products with the exception of canned mackerel. Generally products in this group have a high value added content and their potential production on sales volume is usually small if compared to primary products.

Smoked Mackerel

A number of small smoking plants exist throughout Atlantic Canada, most of which smoke mackerel besides other species for specialized domestic or local markets. A number of larger smoking plants process mainly herring into its various product forms for export markets. A tremendous interest exists in the industry to produce smoked mackerel either in existing facilities or in smoke plants to be constructed. Production and sales of smoked mackerel fillets have enjoyed tremendous growth rates in recent years in the United Kingdom. It is estimated that in excess of 10,000 tonnes (landed weight) of mackerel are now being produced into smoked mackerel fillets and consumed in that country. The product is considered to be a substitute for smoked salmon and as such sells for comparatively high prices. At least one of the surveyed companies is confident that the marketing concepts and approaches which lead to the success of this product in the United Kingdom can be applied successfully to the North American market. Another company currently supplies about 50 percent of the Greek smoked herring market and feels that it can capture a similar portion of the smoked mackerel market in that country if the raw material were available.

While raw material prices are crucial for the viable production of smoked mackerel destined for some markets they are of secondary consideration for other markets or products. Successful exportation to Greece, for example, would require a raw material price of no more than 8-10 ¢/lb at the plant gate while raw material cost for the production of smoked fillets for the North American market are less critical, whereas the quality of raw material becomes the deciding factor.

Quality standards developed in the United Kingdom for this product must be applied to smoked fillets produced for the Canadian and United States markets to ensure its successful introduction and continued market growth. The quality standards call for sea-frozen mackerel frozen in sea water. Mackerel landed in RSW could prove acceptable under specific conditions, while inshore mackerel are rejected out of hand for processing into smoked fillets for these markets. Anticipated quality standards for smoked mackerel destined for export into other markets are somewhat less stringent, and RSW mackerel are certainly acceptable for this production.

Prices paid by United Kingdom processors for sea-frozen mackerel range from 24-30 ¢/lb while sea-frozen mackerel fillets are priced in the 62-63 ¢/lb range.

The quality requirements on mackerel for secondary processing are stressed by all companies contemplating the development of such product lines or are actively doing so. One company, for example, which contemplates restructuring into an exclusive secondary fish processing operation with projected annual sales of $1.6 million of secondary processed pelagics, including mackerel, produced mackerel products for test marketing from imported sea-frozen material. They feel that only sea-frozen mackerel meets their quality requirement, and will likely work with imported product in their commercial production, unless sea-frozen mackerel become available from Canadian vessels.

Many companies pointed out that their smoking or other secondary processing operations would not necessarily be located in Atlantic Canada, but probably at a location closer to the market. In this context, one company brought up the constraints placed on processors in Canada by a law prohibiting the production and sale of smoked, chilled fish in a vacuum pack. They feel that, following the success of smoked mackerel in the United Kingdom, this is the form in which the product has to be sold in North America.

Summary

Tremendous interest exists in the industry in the production of smoked mackerel products. Production capacities exist in Canada or are to be constructed in Atlantic Canada or elsewhere. The quality of raw material for the smoking process is of paramount importance and the current unavailability of sea-frozen mackerel from Canadian sources is a major constraint. Other constraints are the unavailability of mackerel in locations where large smoking plants are located, high price levels for mackerel, and specific Canadian laws, prohibiting vacuum packing of smoked, chilled fish products.

Mackerel Spreads

Mackerel based spreads or pates can be produced in a large variety of flavours and combinations, either from fresh or smoked mackerel meat. Little interest was shown in the industry to pursue the production of this product. Lack of markets or information about markets appears to be the main reason while the need of specialized new equipment and/or retooling of existing equipment (e.g., sealing machines) was cited in some cases.

At least one of the potential smoking operations saw spreads and pates as a natural by-product of the mainstream operation. Broken or soft fillets unsuitable for the fillet market could be cost efficiently processed into spreads. A cold pack is believed to find better market acceptance than a hot pack spread. The product potential for this product appears to be limited.

Marinated Mackerel

No potential at all is attributed to marinated mackerel products. The reasons are lack of North American markets (consumers do not favour marinated fish products in general) and Canada's inability to compete in European markets because of high packaging and transportation cost and import tariffs.

Breaded Products

An interest in breaded or battered mackerel products such as cakes, fingers or fillets was expressed only by one company, which also produced some of these products during the 1974/75 pilot project.

Other companies cannot envision any market prospects for this product group, do not have the processing equipment for its production and lack experience with processing techniques.

The company which showed interest in reviving the product indicated the need for market research and test marketing before a decision for commercial production is made.

Roes

Some companies expressed an interest in mackerel roe on the basis of requests for this product from Spain and Portugal. Most of the companies in the survey were questioned on the presence or absence of roe in the mackerel in their particular area. Not one processor knew whether their mackerel contained roe or not, which may not be surprising in view of the fact that most mackerel are traded in the round state.

Additional research into the spawning pattern of mackerel and the potential to harvest them during the spawning season would probably benefit the industry.

Surimi

Laboratory scale work on surimi production from mackerel has been moderately successful. Most companies question the economic viability of such production. The mackerel would compete with low priced Alaska pollock as a source of raw material and have the added disadvantage of a high fat content, which must be removed. Surimi produced from mackerel is dark in colour and would likely sell at the low end of the market. One suggestion made was that the extracted and recovered oil could probably be sold in the medicinal (Omega

3) market which could change the economics of the surimi production.

None of the companies in the interview sample felt that there is a short term potential for surimi production from mackerel and some were cautiously optimistic as to the long term prospects.

An indepth study of the technical feasibility and economic viability of surimi production from mackerel is necessary to further assess the potential for this product.

Role of Major Processors

Canada is the leading exporter of fishery products in the world today, and it is undisputed that the large vertical integrated fish companies in Eastern Canada contributed decisively to achieve this status. Because of their harvesting, processing and marketing expertise, the participation of these companies in the mackerel industry could become the deciding factor in the successful development of the vast mackerel resource. In consultation with the client, it was therefore agreed that the consultant include all large companies in the interview schedule and report specifically on this sector of the industry. Accordingly, Fishery Products International, Clearwater Fine Foods Inc., Connor Brothers Limited, and National Sea Products Limited were interviewed and while their opinions are reflected in the main body of the report, the following summary may provide an overview of the concerns of this specific sector of the industry.

Market Opportunities

Three companies stressed the immediate opportunities for round frozen mackerel in West African, USSR, Japanese and European markets while the fourth company felt that these markets have been consistently supplied in the past by Europe and asks why customers in these countries would switch to an uncertain supply from Canada. One company stated that sea frozen mackerel for Europe has substantial potential while little or no potential for other than sea frozen product

exists in that market in their opinion. The immediate market potential for round frozen mackerel is estimated by these companies to be in the range of 30,000 to 40,000 MT with anticipated annual growth rates of 10,000 - 15,000 MT.

One company is presently producing salted mackerel products in Newfoundland and stated that good potential exists to increase exports of these products into the existing markets by 2,000 MT or more. The same company also suggested that good but unquantified market potential for frozen mackerel fillet exists.

Another company needs "desperately" additional raw materials for its canning lines and feels that canned mackerel can be successfully introduced into the North American market via existing sales and distribution networks.

Two companies envision good to excellent market potential for smoked mackerel products including pates in North America and mackerel roes in Europe.

One company has budgeted for product development work on mackerel for North American markets but has not decided on a specific direction for this work. Generally, it is felt that the product or product line to be developed should be bland in taste to accommodate North American consumers' preference and be marketed as a low priced protein food.

Existing Constraints

All companies agree that the overriding constraint in developing the market potential of mackerel is the unavailability of raw material. Present inshore supplies are "insecure", "inconsistent"; volumes are too low if and when available; and local inshore fishing seasons are too short. These factors applied to all regions of Atlantic Canada.

High prices for, and substandard quality of, inshore mackerel were the second most important constraints noted in regions outside Newfoundland. Some concern was expressed that if large seiners are given access to the resource, quality may

not improve unless the mackerel are transported in refrigerated sea water.

One company specifically stated the unavailability of sea frozen mackerel, and Canadian laws prohibiting the production and sales of smoked, chilled fish products in vacuum packs as the major constraint in realizing the market potential for smoked mackerel products.

All companies agreed that over-the-side sales and allocations of mackerel to foreign vessels are detrimental to the interest of the Canadian processing industry which has the capacity to handle all landings in existing facilities and which is attempting to develop the very markets now supplied by foreign nations with Canadian mackerel.

The lack of a consistent supply of good quality mackerel at low prices is seen as the major cause for the absence of current development efforts for secondary mackerel products in the industry. Once the industry feels reasonably assured of a long term, consistent supply of mackerel it will feel justified to commit the financial and human resources for product and market research and development necessary for the long term viability of a mackerel industry.

Recommended Solution

The solution offered unanimously by large processors to eliminate the constraints on the development of the mackerel resource and its market potential is the opening of the mackerel fishery to the offshore fleet, including seiners, trawlers and freezer trawlers. It is generally felt that no restrictions should be applied to the efforts of the offshore fleet until the total allowable catch (TAC) or at least a major proportion of the TAC is being landed. Then restrictions can be imposed or allocations made to maintain an orderly fishery. One processor feels that seiners should be given preferential treatment and trawlers should only be allowed to fish for mackerel if seiners are unable to catch the quota.

Processors stress the need for a long term management plan for the mackerel fishery as opposed to the current practice

of issuing "experimental licences" on an annual basis for seiners involved in commercial fishing. Other aspects for an overall solution conveyed to the consultant during interviews were:

- a moratorium on allocations to foreign fleets;
- installation of RSW systems on large seiners, potentially with government assistance;
- continued and stepped-up research on the mackerel resource;
- review of current legislation prohibiting sales of vacuum packed, chilled, smoked fish products in view of today's improved handling and distribution methods;
- government participation in product and market research and development.

Synergistic Benefits to Industry

The opening of the mackerel fishery to the offshore fleet will presumably result in substantial increases of mackerel landings over the next few years, leading to improved fleet and plant utilization, additional income to fishermen, plant workers and processing plants, and expanded activities in associated industries such as transportation, and package manufacturing. Besides these obvious benefits, which have been discussed earlier in this report, the inshore mackerel industry will potentially benefit from increased research and development carried out by processing companies in the wake of increased and consistent landings from the offshore fleet. The research and development effort will likely lead to more sophisticated product lines, the opening of new markets and the stabilization of existing markets for mackerel products. This, in turn, will increase the demand for good quality mackerel from all sources.